Roll No. ....   Total Pages : 04

BT-4/M-20   34113
SURVEYING-II
CE-210N

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) Explain about reconnaissance survey in detail. Write the paints to be kept in mind while selecting triangulation section.   **7**

   (b) The-attitudes of two-proposed stations A and B. 100 km apart are respectively 420 m and 700 m. The intervening obstruction situated at C, 70 km from A has an elevation of 478 m. Ascertain if A and B are intervisible and if necessary, find by how much B should be raised so that the line of sight must nowhere be less than 3 m above the surface of the ground ?   **8**

2. (a) Discuss the base of the object inaccessible when instrument station not in the same vertical plane as the elevated object. **7**

   (b) In the trigonometrical measurement of the difference in level of two stations P and Q. 10480 m apart the following data were obtained :

   Instrument at P, angle of elevation of Q = 0′15″

   Height of instrument at P = 1.42 m

   Instrument at Q, angle of depression of P = 3′33″

   Height of Instrument at Q = 1.45 m

   Height of signal at P = 3.95 m

   Height of signal at Q = 3.92 m

   Find the difference in level between P and Q and the curvature and refraction correction. Take R sin 1″ = 30.38 metres. **8**

Unit II

3. (a) Define the following :

   (i) Most probable value

   (ii) Most probable error

   (iii) True error

   (iv) Residual error. **8**

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(b) An angle A was measured by different persons and following are the values :

Angle	Number of Measurement
65°30′10″	2
65°29′50″	3
65°30′00″	3
65°30′20″	4
65°30′10″	3

Find the most probable value of the angle. **7**

4. (a) Discuss in brief the laws of weights. **8**

(b) The following-observations of three engles A, B and C were taken at one station :

$$A = 75°32′46″.3 \text{ with weight } 3.$$

$$B = 55°09′53″.2 \text{ with weight } 2.$$

$$C = 108°09′28″.8 \text{ with weight } 2.$$

$$A + B = 130°42′41″.6 \text{ with weight } 2.$$

$$B + C = 163°19°22″.5 \text{ with weight } 1.$$

$$A + B + C = 238°52′9″.8 \text{ with weight } 1.$$

Determine the most probable value of each angle. **7**

Unit III

5. (a) Find the L.M.T. of observation at a place the following data :

L.A.T. of observation $= 15^h12^m40^s$

E.T. at G.M.N. $= 5^m10.65^s$ additive to apparent time and increasing at 0.22^s per hour.

longitude of the place $= 20°30'W$. **8**

(b) What are the co-ordinate systems ? Explain any *two*. **7**

6. (a) Define the following :

(i) The Azimuth (A) **5**

(ii) The Declination (δ).

(b) Explain the working principle and survey with total station with neat sketch. **10**

Unit IV

7. (a) The scale of an aerial photograph is 1 cm = 100 cm the photograph size is 20 cm × 20 cm. Determine the number of photographs required to cover an area of 100 sq. km if the longitudinal lap is 60% and the side lap is 30%. **8**

(b) What is the scale of vertical photograph ? Discuss in brief. **7**

8. Explain the basic components, data input and storage output of GIS and GPS. **15**